2009 North Carolina A&T State University Research Plan of Work

Status: Accepted
Date Accepted: 06/02/08

I. Plan Overview

1. Brief Summary about Plan Of Work

This document outlines the 5-Year Plan of Work for FY2009-FY2013 of North Carolina Agricultural and Technical State University (NCA&T). The plan is organized around the five national goals of the Cooperative State Research, Education, and Extension Service (CSREES/USDA) and delineates efforts to address the key agricultural issues in North Carolina.

Overall, the issues driving this 5-Year Plan of Work are listed below:

• Increasing health, nutrition and obesity concerns of North Carolina residents

• Increasing cost of conventional energy resources emphasizing the need to develop renewable energy, bio-energy and bio-based products

• Challenges in water quality and water quantity in the state

• Demands for the use of biotechnology and biosciences to develop new or improved food and agriculturally related products

ull; Changes in rural economies and communities (economically stressed communities need research-based leadership training, database development to support community issues, and opportunities for entrepreneurship)

• Movement away from tobacco as the primary cash crop to viable sustaining alternatives (continuing decline of tobacco and the need for profitable alternative crops and efficient production methods)

• Changes in the population composition and workforce participants (increases in Hispanics in rural areas and among the agricultural workforce has produced an increasing need and demand for population relevant information on health status and quality of life.)

• Increased recognition of the value and benefits of alternative medicine (neutriceuticals and functional foods as medical alternatives)

The following strategies permeate the 5-Year Plan of Work and have been refined and expanded to address the agricultural issues in North Carolina:

1. Increased interaction between research and Extension. The School of Agriculture and Environmental Sciences (SAES) has implemented a strategic plan to enhance collaboration between research and Extension. This collaboration is essential to assure involvement of Extension in not only clarifying agricultural issues but also in being a partner for the delivery and use of information on completion of the research project. Specific strategies to achieve this include a required Extension component/collaboration in all Evans-Allen proposals and split appointments between research and Extension. Because of the important linkages in achieving outcomes, SAES administrators are seeking to join with the North Carolina A&T Extension and the North Carolina State University Research and Extension Combined Plan of Work beginning in 2008.

2. Expanded partnerships and leveraging of research funds. The School of Agriculture and Environmental Sciences actively pursues collaborative relationships with industry and national and community agencies, and other institutions of higher learning to ensure maximum impact of its research projects in terms of both application of findings and attraction of funding to support the growth and viability of the research program.

3.   Selection of six program initiatives. The School of Agriculture and Environmental Sciences is developing a signature research, teaching and cooperative extension program reflected in six broad-based program initiatives. The six program initiatives are: (1) Agromedicine, Nutrition and Food Safety, (2) Biotechnology and Biodiversity, (3) Human and Community Development, (4) International Trade and Development, (5) Small Scale Agriculture, and (6) Soil and Water Quality. These initiatives build on the strengths in the School of Agriculture and Environmental Sciences and align with the five CSREES goals. The Initiatives also support the primary themes of the vision of NC A&T State University.

Estimated Number of Professional FTEs/SYs total in the State.

Year	Extension		Research	
	1862	**1890**	**1862**	**1890**
2009	0.0	0.0	0.0	18.0
2010	0.0	0.0	0.0	20.0
2011	0.0	0.0	0.0	22.0
2012	0.0	0.0	0.0	24.0
2013	0.0	0.0	0.0	25.0

II. Merit Review Process

1. The Merit Review Process that will be Employed during the 5-Year POW Cycle

● Combined External and Internal University External Non-University Panel

2. Brief Explanation

The research director has the primary responsibility for determining the need, priority, and scientific feasibility of the projects proposed and has a procedure for project documentation, merit review, and selection. This procedure assures that the research project proposals are scientifically sound, relevant to society's food and agricultural needs, and not duplicative of efforts undertaken elsewhere. Prior to proposal development, alignment of the topic with the needs of the state and the direction of the six program initiatives in the School of Agriculture and Environmental Sciences is determined. Upon agreement by the department chair, the associate dean for research, and the research director, the principal investigator prepares a proposal on the topic for submission through the Evans-Allen program. The Merit Review Process includes a review by five peer reviewers composed of persons both within and outside the university who are knowledgeable in or familiar with the area of research. The principal investigator is responsible for incorporating suggestions made by the reviewers and must give reasons for any substantive suggestions not included or addressed. The proposal is then reviewed by the associate dean for research who determines if additional review and substantive revision is necessary. Upon acceptance by the associate dean for research and the research director, the proposal is submitted for budgetary review by the Office of Agricultural Research and then transmitted to CSREES/USDA for approval.

III. Evaluation of Multis & Joint Activities

1. How will the planned programs address the critical issues of strategic importance, including those identified by the stakeholders?

The Agricultural Research Program (ARP) in the School of Agriculture and Environmental Sciences (SAES) at NCA&T routinely seeks feedback from agriculturally related stakeholders through a variety of formal and informal interactions and planned activities. These contacts involve all administrative levels within the SAES including administrators, researchers, staff, and students. The stakeholders include agriculturally-related industries, agencies, community groups, and county residents. The format for these activities involve service on many boards and commissions and listening sessions held across the state. Also, the SAES has a Corporate Advisory Board, a community advisory board (Strategic Planning Council), and holds three annual grassroots leadership conferences.

The decision regarding involvement of SAES research scientists in multistate, multi-institutuional and integrated activies is based on whether the involvement will address the identified issues and needs in North Carolina.

2. How will the planned programs address the needs of under-served and under-represented populations of the State(s)?

Addressing the needs of the under-served community is a key component in the mission of the Agricultural Research Program and the university at large. By maintaining open dialogue with stakeholders, scientists and faculty repressentatives are

able to address the needs of the under-served communities of the state of North Carolina. Additionally, persons representing under-served and under-represented individuals and communities serve on the Corporate Advisory Board and the Strategic Planning Council.

3. How will the planned programs describe the expected outcomes and impacts?

The outputs and outcomes of multistate, multi-institutional, multidisciplinary and integrated activities that are related to components addressed by NCA&T are described in the annual report submitted by the Agricultural Research Program to the SAES Dean and in the annual report of accomplishments to CSREES/USDA.

4. How will the planned programs result in improved program effectiveness and/or efficiency?

The involvement of SAES research scientists in multistate, multi-institutional, multidisciplinary and integrated activities assists in improving program effectiveness in that combining efforts, especially with Extension, provides the opportunity to take the research knowledge back to the intended audiences. This enhances our potential for program impact. In terms of improving efficiency, the work load is shared among the persons involved in the collaboration, which generally improves the efficiency of collecting data, developing usable outputs, and bringing about program improvement.

IV. Stakeholder Input

1. Actions taken to seek stakeholder input that encourages their participation

- Targeted invitation to traditional stakeholder groups
- Other (Grassroots Leadership Conferences)
- Targeted invitation to traditional stakeholder individuals

Brief explanation.

In addition to the formal meetings involving ARP administrators and stakeholders, the program conducts several annual outreach activities as a means for gathering input from those affected by the school's research activities or who use the research results. One major event is Small Farms Week, an activity jointly sponsored by the Cooperative Extension Program and the Agricultural Research Program. During this week, farmers, commodity group representatives, and consumers attend activities both on and off campus involving Extension and research. A second major event is the Grassroots Leadership Conference. Administrators and researchers in the Agricultural Research Program participate in three conferences held annually in the three Extension programming regions of the state (eastern, central and mountains) to listen to the issues, concerns, and needs of farmers, community leaders, residents, volunteers, members of the Strategic Planning Council, Specialized Committee members and county and staff members. These grassroots conferences also assist the Agricultural Research Program in needs assessment for proposal development and program priorities. Through these activities, SAES is able to share information about research underway at the University, and receive input from those that use the research results. Other major outreach activities include field days that bring farmers, commodity groups, and consumers into direct contact with specific SAES research projects. Feedback is also sought about research and research related activities by the researchers, their research teams, and by staff associated with ARP and the University; the input is then shared within SAES and incorporated into future research activities.

2(A). A brief statement of the process that will be used by the recipient institution to identify individuals and groups stakeholders and to collect input from them

1. Method to identify individuals and groups

- Open Listening Sessions
- Use Advisory Committees
- Needs Assessments
- Use External Focus Groups

Brief explanation.

The administrators and faculty are represented on a broad variety of local, state and national boards and organizations that provide opportunities to document issues and concerns in the state. These concerns and issues are then shared with others in the School.

2(B). A brief statement of the process that will be used by the recipient institution to identify individuals and groups who are stakeholders and to collect input from them

1. Methods for collecting Stakeholder Input

- Meeting with traditional Stakeholder groups
- Survey of traditional Stakeholder individuals
- Meeting with the general public (open meeting advertised to all)
- Survey of traditional Stakeholder groups
- Meeting specifically with non-traditional groups
- Other (Reading/reviewing documents by groups or about groups that describe needs)
- Meeting with traditional Stakeholder individuals

Brief explanation

Diverse methods are used to collect information and data on stakeholder needs. There is a proactive effort including face-to-face meetings with groups as well as reading/reviewing current documents (strategic plans, newspapers, newsletters, etc) that identify research needs of individuals and communities in North Carolina.

3. A statement of how the input will be considered

- To Set Priorities
- In the Staff Hiring Process
- To Identify Emerging Issues
- In the Action Plans
- Redirect Research Programs

Brief explanation.

The Strategic Planning Council, along with the SAES Associate Dean for Research and Research Director, meet to discuss and use this information in research project development, and for Extension planning in response to local and state needs and changes.

V. Planned Program Table of Content

S. NO.	PROGRAM NAME
1	Human and Community Development
2	Biotechnology and Biodiversity
3	Soil and Water Quality
4	Agromedicine, Nutrition and Food Safety
5	Small Scale Agriculture
6	International Trade and Development

V(A). Planned Program (Summary)

Program #1

1. Name of the Planned Program

Human and Community Development

2. Brief summary about Planned Program

This planned program involves empowering individuals, families and communities by increasing the knowledge and the skill base, and developing behaviors to address the daily quality of life issues. These issues relate to financial literacy and management, parenting and youth development, aging, health, adequate nutrition, leadership development. It also relates to personal safety and changing employment prospects. In addition, this planned program involves strengthening of the community infrastructure including housing and effective leadership.

The need to address these problems is especially critical in communities with large portions of underserved populations. A substantial part of this population is located in these Black Belt counties of North Carolina. The Black Belt counties make up 15 of the 22 counties identified by the USDA's Economic Research Service as persistently poor and contain above average concentrations of African Americans. These counties include: Bertie, Bladen, Edgecombe, Halifax, Hertford, Hyde, Jones, Martin, Northampton, Perquimans, Pitt, Sampson, Tyrrell, Warren and Washington. The depressed tobacco economy, agricultural industrialization and environmental injustice have exacerbated the problems of high unemployment, poverty, and low educational attainment in these communities.

3. Program existence :   Intermediate (One to five years)

4. Program duration :   Long-Term (More than five years)

5. Expending formula funds or state-matching funds :   Yes

6. Expending other than formula funds or state-matching funds :   Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
601	Economics of Agricultural Production and Farm Management				20%
802	Human Development and Family Well-Being				15%
803	Sociological and Technological Change Affecting Individuals, Familie				15%
804	Human Environmental Issues Concerning Apparel, Textiles, and Res				20%
805	Community Institutions, Health, and Social Services				30%
	Total				100%

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Adequate life span development of the individual is essential for building vibrant and viable communities. Well-rounded individuals are the building blocks of families, which in turn form the building blocks of communities. The Human and Community Development Initiative in the School and Environmental Sciences underscore the importance of individuals, families and communities. This initiative consists of a team of teaching, research and cooperative extension faculty. Activities of the team are designed to be synergistic, complementary and supplemental to the activities of the five other initiatives in the School of Agriculture and Environmental Sciences at North Carolina A&T. Whether as a group or as individuals, members of the Human and Community Development Initiative team are involved in an array of activities in instruction, research and cooperative extension that deal with traditional and contemporary problems that confront individuals and communities. Although the program serves all communities in the state, the need to address these problems is especially critical in communities with large portions of underserved populations. A substantial part of this population is located in the Black Belt counties of North Carolina.

In addition to traditional approaches, some innovative approaches are necessary to address emerging problems related to human and community development. The Human and Community Development Initiative team is involved in finding and implementing solutions to these problems through the following focus areas.

- •human development
- •leadership and volunteer development
- •community and economic development
- •community infrastructure
- •food and agricultural policy

2. Scope of the Program

- In-State Research

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

·   Individuals and families seek to improve their personal, social and economic situation.
·   Communities can improve their infrastructure and economic situation through improved leadership and with research-based information to guide decisions

2. Ultimate goal(s) of this Program

The ultimate goal of this program is to conduct social-science research that will provide information which individuals, families and communities can use to improve the quality of life.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2009	0.0	0.0	0.0	4.1
2010	0.0	0.0	0.0	4.5
2011	0.0	0.0	0.0	4.8
2012	0.0	0.0	0.0	5.3
2013	0.0	0.0	0.0	5.5

V(F). Planned Program (Activity)

1. Activity for the Program

   •

Conduct research studies in the following areas; (1) to determine the challenges of new manufactured home owners in the site installation of the units and to develop recommendations to the industry for improving the installation process, (2) to develop a database of community-based organizations (CBOs) by location, program priorities, capacity and method of operation to encourage collaboration among CBOs, policymakers, businesses and development agencies, and (3) to define factors that impact leadership development in rural areas that could lead to new or improved programs for developing future leaders and contributing to the sustainability of rural communities.

   •Present findings at professional meetings.
   •Publish research findings in professional journals.
   •Share findings with Extension educators, end users or stakeholders, and with other groups that may use the information in improving collaboration and/or methods of information delivery.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	**Indirect Methods**
• Demonstrations • Other 1 (Tours) • Group Discussion • Education Class • One-on-One Intervention • Workshop	• Other 1 (Publications) • Newsletters • TV Media Programs • Other 2 (Magazine)

3. Description of targeted audience

   •Individuals and families living in rural areas
   •Underserved populations
   •Rural communities
   •Policy makers
   •Community based organizations
   •Scientific Community

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	513	434473	44	0
2010	564	456197	48	0
2011	620	479007	53	0
2012	750	502957	59	0
2013	825	528105	65	0

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2009 :0   **2010** :0   **2011** : 0   **2012** :0   **2013** :0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2009	5	0	0
2010	7	0	0
2011	9	0	0
2012	9	0	0
2013	10	0	0

V(H). State Defined Outputs

1. Output Target

- # entries in database of community-based organizations

  2009 :110   **2010** :150   **2011** : 210   **2012** :300   **2013** :300

- # presentations at professional meetings

  2009 :8   **2010** :8   **2011** : 10   **2012** :11   **2013** :12

- # media occurrences

  2009 :12   **2010** :14   **2011** : 15   **2012** :15   **2013** :15

V(I). State Defined Outcome

O. No	Outcome Name
1	# organizations accessing and using database of community-based organizations
2	% improved leadership development in rural communities
3	# policy makers using data to change policies affecting individuals, families and communities

Outcome #1

1. Outcome Target

organizations accessing and using database of community-based organizations

2. Outcome Type :   Change in Action Outcome Measure

2009 : 100   **2010 :** 100   **2011 :** 200   **2012 :** 300   **2013 :** 310

3. Associated Institute Type(s)

•1890 Research

4. Associated Knowledge Area(s)

● 805 - Community Institutions, Health, and Social Services

Outcome #2

1. Outcome Target

% improved leadership development in rural communities

2. Outcome Type :   Change in Action Outcome Measure

2009 : 10   **2010 :** 20   **2011 :** 30   **2012 :** 40   **2013 :** 50

3. Associated Institute Type(s)

•1890 Research

4. Associated Knowledge Area(s)

● 803 - Sociological and Technological Change Affecting Individuals, Families and Communities

● 805 - Community Institutions, Health, and Social Services

Outcome #3

1. Outcome Target

policy makers using data to change policies affecting individuals, families and communities

2. Outcome Type :   Change in Knowledge Outcome Measure

2009 : 6   **2010 :** 7   **2011 :** 8   **2012 :** 8   **2013 :** 9

3. Associated Institute Type(s)

•1890 Research

4. Associated Knowledge Area(s)

● 802 - Human Development and Family Well-Being

● 803 - Sociological and Technological Change Affecting Individuals, Families and Communities

● 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

● 805 - Community Institutions, Health, and Social Services

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

● Government Regulations
● Public Policy changes

Description

Regulations regarding manufactured housing may affect how the data generated will be used. Also, changes in policies regarding farmland use/loss may affect the outcomes.

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- During (during program)

Description

     Evaluation studies will be completed annually as part of the strategic planning and evaluation activities of the School of Agriculture and Environmental Sciences. An evaluation position is currently being filled. The person in this position will assist in developing the annual measures of the six planned programs.

2. Data Collection Methods

- Telephone
- Structured
- Mail
- On-Site

Description

A variety of methods will be used to collect data regarding the outcomes. These methods will be more fully developed as a result of a new evaluation position be added to the staff.

V(A). Planned Program (Summary)

Program #2

1. Name of the Planned Program

Biotechnology and Biodiversity

2. Brief summary about Planned Program

Research focusing on using biotechnology in the development of agricultural and related products is the focus of this planned program. Current agricultural production is not meeting the demand for food worldwide made by the increasing population. Innovation is needed to increase this output and to conserve our planet's resources. Biotechnology is one of several complementary means of increasing production through higher yields, better nutritional quality, and reducing the use of chemicals for pest control causing less damage to the environment. Biotechnology is also used to conserve natural resources. The applications of biotechnology are broad, and the advantages so compelling, that virtually every industry is using the technology. Biotechnology is enabling industries to make new or better products, often with greater speed, efficiency and flexibility. Research is needed to assist in the use of this new technological tool new century. This research will assist in guiding safe and function catalyze growth in products derived from biotechnology.

This planned program is included because of the importance of biotechnology and biodiversity to the North Carolina agricultural industry and also because the state's biotechnology industry is among the nation's three largest. The demand for biotechnologists is projected to increase dramatically in the next ten years, especially in North Carolina, where more than 200 companies are involved in biotechnology.

3. Program existence :   Intermediate (One to five years)

4. Program duration :   Long-Term (More than five years)

5. Expending formula funds or state-matching funds :   Yes

6. Expending other than formula funds or state-matching funds :   Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
133	Pollution Prevention and Mitigation				20%
201	Plant Genome, Genetics, and Genetic Mechanisms				10%
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants				10%
302	Nutrient Utilization in Animals				10%
308	Improved Animal Products (Before Harvest)				20%
311	Animal Diseases				10%
403	Waste Disposal, Recycling, and Reuse				20%
	Total				100%

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Developments in agricultural/environmental biotechnology and genomics allow us to understand the molecular processes that underlie life, revolutionizing agriculture and providing new approaches towards deciphering, protecting and utilizing this planet's rich biodiversity. Thus an unprecedented opportunity for scientific and technological development and agribusiness exists. Agricultural/environmental biotechnology and genomics will impact all aspects of life in the new millennium – wellness, human resource development/training, post-secondary education, economic development, and renewable resources development strategies. These techno-developments provide new possibilities for rural development and challenging research and educational opportunities for environmental issues. The demand for biotechnologists is projected to increase dramatically in the next ten years, especially in North Carolina, where more than 200 companies are involved in biotechnology.

Biodiversity is the foundation of sustainable agriculture, crop improvement, ecosystem stability, medicines, and other essential aspects of our society, both present and future. Thus, conserving biodiversity is extremely important.

The Biotechnology and Biodiversity Program Initiative is currently structured around eight areas:
•plant tissue culture and transformation
•bioremediation/phytoremediation
•fermentation
•food safety
•mushroom biology and biotechnology
•molecular biology
•genomics
•bioinformatics

2. Scope of the Program

- Multistate Research
- In-State Research

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

·   The focus on biotechnology and biodiversity will continue and expand
·   Funding for studies in competitive funding will increase

2. Ultimate goal(s) of this Program

The ultimate goal is to address the issues in biotechnology and biodiversity, and to provide answers that can help industries that include agriculture or are agriculturally-related as well as producers and consumers.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2009	0.0	0.0	0.0	2.8
2010	0.0	0.0	0.0	3.0
2011	0.0	0.0	0.0	3.2
2012	0.0	0.0	0.0	3.8
2013	0.0	0.0	0.0	4.0

V(F). Planned Program (Activity)

1. Activity for the Program

   •Conduct research studies to expand understanding of the mechanism of scours and characterize strains that cause the disease, to improve understanding of the biology of edible and medicinal exotic mushrooms to be able to identify appropriate commercial strains, to develop technologies to convert corn stalks and cheese whey into biofuels and biomaterials including hydrogen, bioethnol and succinic acid, to seek non-antibiotic additives in poultry production to control poultry diseases of Campylobacter jejuni and Salmonella, and to decipher gene expression associated with combating bacterial infection (mastitis) in cattle.
   •Give presentations at professional meetings and with Cooperative Extension
   •Publish findings in professional journals and in the Agricultural Research Program research magazine
   •Seek patents for new discoveries.
   •Conduct tours, workshops and other activities to share findings with Extension educators, end users or stakeholders, and with companies that may commercialize products.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	**Indirect Methods**
• Education Class • Group Discussion • Other 1 (Tours) • Workshop • One-on-One Intervention • Demonstrations	• Newsletters • TV Media Programs • Other 1 (Publications)

3. Description of targeted audience

•Companies involved in biotechnology applications
•Farmers involved in producting agricultural products using biotechnology and those who are considering it
•Consumers

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	**Target**	**Target**	**Target**	**Target**
2009	932	434473	176	0
2010	1026	456197	194	0
2011	1129	479007	213	0
2012	1242	502957	234	0
2013	0	528105	257	0

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2009 : 1	**2010** : 2	**2011** : 2	**2012** : 3	**2013** : 4

3. Expected Peer Review Publications

.

Year	Research Target	Extension Target	Total
2009	7	0	0
2010	8	0	0
2011	9	0	0
2012	10	0	0
2013	12	0	0

V(H). State Defined Outputs

1. Output Target

- # presentations at professional meetings

  2009 :8   **2010** :9   **2011** : 10   **2012** :11   **2013** :13

- # media occurrences

  2009 :3   **2010** :4   **2011** : 5   **2012** :6   **2013** :7

V(I). State Defined Outcome

O. No	Outcome Name
1	# of licenses of current patents
2	# breakthoughs in new uses for biomass or other agricultural co-products in North Carolina
3	# improved plant production resulting from new propagation techniques
4	# technologies to prevent/treat animal diseases

Outcome #1

1. Outcome Target

# of licenses of current patents

2. Outcome Type :   Change in Condition Outcome Measure

 2009 : 1   **2010 :** 1   **2011 :** 2   **2012 :** 2   **2013 :** 2

3. Associated Institute Type(s)

 •1890 Research

4. Associated Knowledge Area(s)

- 302 - Nutrient Utilization in Animals
- 311 - Animal Diseases
- 403 - Waste Disposal, Recycling, and Reuse

Outcome #2

1. Outcome Target

breakthoughs in new uses for biomass or other agricultural co-products in North Carolina

2. Outcome Type :   Change in Condition Outcome Measure

 2009 : 1   **2010 :** 1   **2011 :** 2   **2012 :** 2   **2013 :** 2

3. Associated Institute Type(s)

 •1890 Research

4. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation
- 302 - Nutrient Utilization in Animals
- 308 - Improved Animal Products (Before Harvest)
- 403 - Waste Disposal, Recycling, and Reuse

Outcome #3

1. Outcome Target

improved plant production resulting from new propagation techniques

2. Outcome Type :   Change in Knowledge Outcome Measure

 2009 : 1   **2010 :** 1   **2011 :** 1   **2012 :** 1   **2013 :** 3

3. Associated Institute Type(s)

 •1890 Research

4. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants

Outcome #4

1. Outcome Target

technologies to prevent/treat animal diseases

2. Outcome Type :   Change in Knowledge Outcome Measure

    2009 : 1   **2010 :** 1   **2011 :** 1   **2012 :** 1   **2013 :** 2

3. Associated Institute Type(s)

- 1890 Research

4. Associated Knowledge Area(s)

- 311 - Animal Diseases

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Government Regulations
- Public Policy changes
- Economy

Description

    North Carolina state funding has a strong focus on the development of biotechnology as an engine for economic development. Competing needs in the state may direct some monies and attention from biotechnology. This could affect how findings from our research studies would be used.

    Public policy could affects how biotechnology is used in our society for food and non-food products. Restrictions in this areas could affect our outcomes and could shift our research focus.

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- During (during program)

Description

Evaluation studies will be completed annually as part of the strategic planning and evaluation activies of the School of Agriculture and Environmental Sciences. An evaluation position is currently being filled. The person in this position will assist in developing the annual measures.

2. Data Collection Methods

- Structured
- Telephone
- Mail

Description

A variety of methods will be used to collect data regarding the outcomes. These methods will be more fully developed as a result of a new evaluation position be added to the staff.

V(A). Planned Program (Summary)

Program #3

1. Name of the Planned Program

Soil and Water Quality

2. Brief summary about Planned Program

The primary focus of this planned program is on improving soil and water quality through agricultural "best management practices" that increase soil organic matter content and reduce tillage. A primary audience for this initiative is small-scale and limited resource farmers in the state.

Good soil management practices prevent soil erosion and reduce runoff, major causes of soil degradation in North Carolina. Erosion results in (soil) sediment movement to surface waters. Sediment can come from many sources: agricultural fields, woodlands, highway road banks, construction sites, and mining operations. Sediment destroys fish spawning beds, reduces useful storage volume in reservoirs, clogs streams, makes costly filtration necessary for municipal water supplies, and can result in costly environmental, economic, and social damages. Runoff water also can transport nutrients that result in algal blooms and resulting damage to surface water biota. Runoff can carry potentially harmful nutrients, chemicals, and pesticides to surface and ground waters. Erosion of sediments and runoff can be reduced with the employment of best management practices on farms; for example grassed waterways, terraces, surface residues, improved soil structure, and increased organic matter.

Also, research is needed in this natural resource area because North Carolina is a leader in the amount of animal waste resulting from the production of hogs, poultry and other animals for the food supply. This waste must be handled in an environmentally friendly, safe and adequate manner.

This research is needed to address the soil and water quality but also is especially needed by small-scale and limited resource farmers in the state, who need solutions tailor made to assure economic benefits to their production processes.

3. Program existence :   Mature (More then five years)

4. Program duration :   Long-Term (More than five years)

5. Expending formula funds or state-matching funds :   Yes

6. Expending other than formula funds or state-matching funds :   Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships				34%
112	Watershed Protection and Management				22%
133	Pollution Prevention and Mitigation				8%
205	Plant Management Systems				28%
403	Waste Disposal, Recycling, and Reuse				8%
	Total				100%

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

The southeastern United States, and North Carolina in particular, is a rapidly growing region. Rapid growth needs to be supported by sound environmental decisions that preserve and enhance the soil and water quality of the region. The university faculty will implement research projects to investigate Best Management Practices that improve soil and water quality and mitigate environmental degradation resulting from urban and suburban development.

Past soil management practices, designed to meet the food and fiber needs of an increasing population, have taxed the resiliency of natural processes to maintain global balances of energy and matter. The degradation of our soil resources is motivating researchers and farmers to investigate and employ less input-intensive and more sustainable management systems that protect the environment and soil resources. Good soil management practices prevent soil erosion and reduce runoff, major causes of soil degradation in North Carolina.

North Carolina's livestock industry contributes a great deal to the state's economy and to farm income. Small-scale livestock production is a viable alternative for small farmers seeking to diversify cropping enterprises. Managing manure and other waste products produced by livestock in a sustainable, ecologically sensitive manner that is respectful of the community's right to a healthy, odor and pollution-free environment is a challenge for farmers. Traditional management practices for livestock waste have in some cases resulted in overloading soils with nutrients and trace materials, and in pollution of surface and groundwater. Alternatives to traditional practices for waste treatment are needed, particularly those appropriate to small and resource-limited farmers. In most cases, these farmers lack the capital to install highly technical and expenses treatment systems, as well as the expertise and training to run and maintain them.

Normally, the contribution of water pollutants from a homeowner's lawn, the grounds of a business establishment, or recreational turf, such as golf courses or athletic fields, is small. However, when millions of small inputs are added together, the impact on water quality may be significant. Population increases and construction of housing and business development make this situation acute in North Carolina. The key to minimizing this collective impact is reducing the levels of pollutants that enter the system. Best management practices in the urban environment to maintain high quality water in North Carolina watersheds include: sensible subdivision practices such as management of impervious surfaces, reduction in fertilizer and pesticide applications to the urban and suburban landscape (private properties of all sizes), proper maintenance of wastewater collection and treatment systems, and water conservation.

The research will address soil and water quality issues in North Carolina. Specific focus areas include:
ull; Agricultural Best Management Practices
ull; Non-Agricultural Best Management Practices

2. Scope of the Program

- In-State Research

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

·   Limited resource and small scale farmers are leaving the farming community rapidly.

·   Limited resource and small scale farmers can be assisted with practices that allow them to remain in the farming industry

·   Water quality and quantity will become more of an environmental and health issue nationally

·   Research funds for water quality and quantity will increase

2. Ultimate goal(s) of this Program

•Improve the soil and water quality in North Carolina

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	**1890**	**1862**	**1890**
2009	0.0	0.0	0.0	1.8
2010	0.0	0.0	0.0	2.0
2011	0.0	0.0	0.0	2.3
2012	0.0	0.0	0.0	2.3
2013	0.0	0.0	0.0	2.5

V(F). Planned Program (Activity)

1. Activity for the Program

·   Conduct research studies to develop low-cost water filtration systems using nutshell-based activated carbons, to determine and measure the effectiveness of cover crops in meeting the nutrient needs in organic cropping systems, to use constructed wetlands for treatment of swine wastewater, and to assess how soil management practices, especially no-till approaches, affect soil quality over time.

·   Present findings at professional meetings.

·   Publish research findings in professional journals.

·   Share findings with Extension educators, end users or stakeholders, and with other groups that may use the information to improve the viability of small scale agricultural operations.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	**Indirect Methods**
- Other 1 (Tours) - One-on-One Intervention - Demonstrations - Education Class - Workshop - Group Discussion	- TV Media Programs - Newsletters - Other 1 (Publications)

3. Description of targeted audience

•Extension educators
•Small-scale and limited resource farmers
•Environmental groups interesting in preserving soil and water quality

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	437	434473	0	0
2010	482	456197	0	0
2011	530	479007	0	0
2012	583	502957	0	0
2013	641	528105	0	0

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2009 :0   **2010 :**0   **2011 :** 0   **2012 :**0   **2013 :**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2009	6	0	0
2010	7	0	0
2011	8	0	0
2012	9	0	0
2013	10	0	0

V(H). State Defined Outputs

1. Output Target

- # field days

  2009 :1   **2010 :**1   **2011 :** 1   **2012 :**1   **2013 :**2

- # presentations at professional meetings

  2009 :5   **2010 :**6   **2011 :** 7   **2012 :**8   **2013 :**9

- # workshops on improved soil and water management practices

  2009 :4   **2010 :**4   **2011 :** 4   **2012 :**6   **2013 :**7

- # media occurrences

2009 :6   **2010** :8   **2011** : 10   **2012** :12   **2013** :12

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of farmers adopting improved soil and water quality management practices
2	Development of water treatment (wetlands) for small-scale farmers

Outcome #1

1. Outcome Target

Number of farmers adopting improved soil and water quality management practices

2. Outcome Type :   Change in Knowledge Outcome Measure

2009 : 50	**2010 :** 60	**2011 :** 60	**2012 :** 75	**2013 :** 80

3. Associated Institute Type(s)

- •1890 Research

4. Associated Knowledge Area(s)

- ● 102 - Soil, Plant, Water, Nutrient Relationships
- ● 112 - Watershed Protection and Management
- ● 133 - Pollution Prevention and Mitigation
- ● 403 - Waste Disposal, Recycling, and Reuse

Outcome #2

1. Outcome Target

Development of water treatment (wetlands) for small-scale farmers

2. Outcome Type :   Change in Condition Outcome Measure

2009 : 0	**2010 :** 0	**2011 :** 1	**2012 :** 1	**2013 :** 1

3. Associated Institute Type(s)

- •1890 Research

4. Associated Knowledge Area(s)

- ● 112 - Watershed Protection and Management
- ● 133 - Pollution Prevention and Mitigation
- ● 403 - Waste Disposal, Recycling, and Reuse

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- ● Natural Disasters (drought,weather extremes,etc.)
- ● Government Regulations

Description

The outcomes of this planned program could be seriously affected by natural disasters as well as changes in government regulations. North Carolina may change water qualtiy regulations that could affect the farming population.

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- ● During (during program)

Description

    Evaluation studies will be completed annually as part of the strategic planning and evaluation activities of the School and Environmental Sciences. A position for an evaluation specialist is currently being filed. The person in this position will assist in developing the annual measures of the planned program.

2. Data Collection Methods

- On-Site
- Mail
- Structured
- Telephone

Description

    A variety of methods will be used to collect data regarding the outcomes. These methods will be more fully developed when a new evaluation position is added to the staff.

V(A). Planned Program (Summary)

Program #4

1. Name of the Planned Program

Agromedicine, Nutrition and Food Safety

2. Brief summary about Planned Program

The production and consumption of agricultural products are associated with significant risks of injuries and illnesses such as on-farm occupational injuries, infections from foodborne pathogens, communicable disease of animal origin, nutritional deficiencies and environmental and health disparities. Underserved communities are disproportionately impacted by many of these preventable injuries and illnesses. The cumulative cost of these agricultural health and safety problems poses considerable financial burden on the nation's economy due to economic losses due to health care cost, loss of productivity, and decreased overall quality of life.

Many chronic diseases, including heart disease, stroke, hypertension, diabetes and some forms of cancer, are related to nutritional factors. The prevalence of some of these chronic conditions is higher among certain ethnic minority groups. Several demographic and nutrition-related shifts are occurring in North Carolina and the nation. One is the increased rate of growth of the Hispanic population in the nation and particularly in the state. Another societal shift is increased attention being given to functional foods and nutriceuticals as ways to address the health of the population.

Research is needed to address the health and safety needs of agricultural forestry and fisheries communities and consumers of agricultural products with special attention to underserved communities.

3. Program existence :   Intermediate (One to five years)

4. Program duration :   Long-Term (More than five years)

5. Expending formula funds or state-matching funds :   Yes

6. Expending other than formula funds or state-matching funds :   Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
204	Plant Product Quality and Utility (Preharvest)				10%
502	New and Improved Food Products				30%
503	Quality Maintenance in Storing and Marketing Food Products				10%
701	Nutrient Composition of Food				18%
703	Nutrition Education and Behavior				12%
712	Protect Food from Contamination by Pathogenic Microorganisms, Pa				20%
	Total				100%

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Agriculture is a multibillion-dollar industry that is vital to the US economy, in general and to the state of North Carolina in particular. In fact, agriculture is a $66 billion a year industry that employs 20 percent of North Carolina's work force. However, farming is second only to mining as the most dangerous occupation in the United States.

The cost of health care in North Carolina from farm-related injuries exceeds $200 million annually. Forestry and commercial fishing are nearly as dangerous as farming.

There are also community and environmental health concerns associated with these rural occupations that not only impact the well being of rural residents but also the consumers of agricultural products as well.These include health care access and delivery, environmental contaminants (water and air quality), food safety, nutrition, and more recently biosecurity issues. Among these issues, food safety and nutrition represent major sources of preventable diseases that cost the nation billions of dollars each year. An estimated 76 million people contract foodborne illnesses each year in the US, accounting for 325,000 hospitalizations and more than 5,000 deaths. This translates into a yearly cost of all foodborne diseases in the US of $30 billion in direct medical expenses and lost productivity. Nutrition related health problems (e.g., obesity, diabetes, cardiovascular diseases) are major public health concerns especially with recent data showing a third of the US population classified as obese. The National Institute of Health estimates cost of obesity at $99.2 billion/year with obesity related diseases such as diabetes, heart diseases, osteoarthritis, cancer, and hypertension costing the nation over $187 billion/year.
To address these health and safety challenges in North Carolina and find solutions specifically tailored to the needs of underserved communities, the planned program of "Agromedicine, Nutrition and Food Safety" has the following thrust areas:

•nutrition
•occupational health and safety
•food safety
•zoonotic diseases
•nutraceutical, functional, and organic foods
•minority and environmental health

2. Scope of the Program

- In-State Research

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

- Nutrition-related health problems will continue and research can help reduce these problems.
- Food safey concerns can be adequately addressed through use of research-based technologies
- Funding will continue and strengthen in the area of agromedicine, nutrion and food safety

2. Ultimate goal(s) of this Program

   The ultimate goals goals of this planned program are the following:
- Reduce nutritionally-related health problems through improved nutrition
- Reduce foodborne illnesss through improved food safety
- Address problems related to safety in the production of agricultural and agriculturally-related products
- Develop new food products or improve existing food products

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	**1890**	**1862**	**1890**
2009	0.0	0.0	0.0	4.6
2010	0.0	0.0	0.0	5.2
2011	0.0	0.0	0.0	5.7
2012	0.0	0.0	0.0	6.2
2013	0.0	0.0	0.0	6.4

V(F). Planned Program (Activity)

1. Activity for the Program

- Conduct studies to determine functional food ingredients from selected North Carolina agricultural by-products, to evaluate select plant extracts as potential food preservatives and anticarcinogens, to enhance the microbiological quality of probiotic supplements, to determine food knowledge and practices among different population subgroups and develop targeted and focused intervention methods for maximum effect, and to improve healthy eating and physical activity of Hispanic women.
- Present findings at professional meetings and with Coopeative Extension
- Publish research findings in professional journals and Agricultural Research Program's research magazine.
- Seek patents for new discoveries.
- Conduct tours, workshops and other activities to share findings with Extension educators, end users or stakeholders, and with companies that may commercialize products.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	**Indirect Methods**
- Workshop - Group Discussion - Other 1 (Tours) - Education Class	- Newsletters - TV Media Programs - Other 1 (Publications)

• Demonstrations • One-on-One Intervention	

3. Description of targeted audience

The target audience for this research are the following:
•Extension educators for use in programs and outreach activities
•Companies involved in health and nutrition related products and/or food safety
•Consumers

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	979	434473	69	0
2010	1077	456197	76	0
2011	1185	479007	84	0
2012	1304	502957	92	0
2013	1434	528105	101	0

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2009 :1   **2010 :**1   **2011 :** 1   **2012 :**2   **2013 :**2

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2009	7	0	0
2010	8	0	0
2011	9	0	0
2012	10	0	0
2013	12	0	0

V(H). State Defined Outputs

1. Output Target

• # presentations at professional meetings

2009 :6   **2010 :**7   **2011 :** 8   **2012 :**9   **2013 :**12

• # media occurrences

2009 :8   **2010 :**9   **2011 :** 10   **2012 :**11   **2013 :**13

V(I). State Defined Outcome

O. No	Outcome Name
1	# hispanic and other minority women adopting healthy nutrition and exercise practices
2	# of companies purchasing licenses for food and food safety related patents
3	# breakthroughs in new technologies to address food safety
4	# new food products that industry can manufacture to improve health

Outcome #1

1. Outcome Target

hispanic and other minority women adopting healthy nutrition and exercise practices

2. Outcome Type :   Change in Knowledge Outcome Measure

2009 : 60   **2010 :** 90   **2011 :** 120   **2012 :** 150   **2013 :** 160

3. Associated Institute Type(s)

•1890 Research

4. Associated Knowledge Area(s)

● 703 - Nutrition Education and Behavior

Outcome #2

1. Outcome Target

# of companies purchasing licenses for food and food safety related patents

2. Outcome Type :   Change in Action Outcome Measure

2009 : 1   **2010 :** 1   **2011 :** 1   **2012 :** 1   **2013 :** 1

3. Associated Institute Type(s)

•1890 Research

4. Associated Knowledge Area(s)

● 502 - New and Improved Food Products

● 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occuring Toxins

Outcome #3

1. Outcome Target

breakthroughs in new technologies to address food safety

2. Outcome Type :   Change in Action Outcome Measure

2009 : 2   **2010 :** 3   **2011 :** 3   **2012 :** 4   **2013 :** 5

3. Associated Institute Type(s)

•1890 Research

4. Associated Knowledge Area(s)

● 502 - New and Improved Food Products

● 503 - Quality Maintenance in Storing and Marketing Food Products

● 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occuring Toxins

Outcome #4

1. Outcome Target

new food products that industry can manufacture to improve health

2. Outcome Type :   Change in Knowledge Outcome Measure

| **2009 :** 1 | **2010 :** 1 | **2011 :** 1 | **2012 :** 1 | **2013 :** 1 |

3. Associated Institute Type(s)

•1890 Research

4. Associated Knowledge Area(s)

● 204 - Plant Product Quality and Utility (Preharvest)

● 502 - New and Improved Food Products

● 701 - Nutrient Composition of Food

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

● Other (National public health problem)
● Populations changes (immigration,new cultural groupings,etc.)

Description

A number of extenal factors could affect the outcomes of this planned program. One is that there could be a national health problem that may change the direction of the research to address the concern. One may be a special problem with food safety related to terriorist activity. Also a major change would be a more dramatic increase in obesity in the Hispanic population.

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

● During (during program)

Description

    Evaluation studies will be completed annually as part of the strategic planning and evaluation activities of the School of Agriculture and Environmental Sciences. A position for an evaluation specialist is currently being filled. The person in this position will assist in developing the annual measures of the planned program.

2. Data Collection Methods

● Mail
● Telephone
● Structured

Description

A variety of methods will be used to collect data regarding the outcomes. These methods will be more fully developed when a new evaluation position is added to the staff.

V(A). Planned Program (Summary)

Program #5

1. Name of the Planned Program

Small Scale Agriculture

2. Brief summary about Planned Program

North Carolina A&T State University is in the unique position to address issues related to small scale, limited resource, African-American farmers in North Carolina. This program in Small Scale Agriculture will, among other objectives, enhance coordination of research, outreach and extension efforts, technical assistance, and other educational efforts to enhance the potential of socially disadvantaged farmers and ranchers to successfully acquire, own, operate, and retain farms and ranches, and to participate equitably in the full range of agricultural programs available to all farmers.

A major thrust of the agricultural research program is to work in tandem with Extension to locate and determine the marketing parameters of alternatives to tobacco farming. Small scale farmers are particularly affected by the tobacco decline and are the primary focus of the research/Extension efforts. The focus is to assist tobacco farmers in transitioning from growing tobacco to the production and successful marketing of niche and alternative products such as upscale pork, exotic mushrooms, wine vineyards, cut flowers, and fuel crops. Also, attention will focus on opportunities for value-added agriculture especially on using swine waste for energy resources.

This planned program is included because of the research needs of the state regarding small farms and the movement away from the traditional crop of tobacco. Rural communities and the state economic situation will benefit from this planned program.

3. Program existence :   Mature (More then five years)

4. Program duration :   Long-Term (More than five years)

5. Expending formula funds or state-matching funds :   Yes

6. Expending other than formula funds or state-matching funds :   Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
202	Plant Genetic Resources				13%
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants				17%
205	Plant Management Systems				17%
206	Basic Plant Biology				8%
308	Improved Animal Products (Before Harvest)				13%
401	Structures, Facilities, and General Purpose Farm Supplies				32%
	Total				100%

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

The most widely used description of the structure of agriculture is based on the statistic of gross farm sales. The USDA Economic Research Service labels three-fourths of the Nation's farms that have annual gross sales under $50,000 as "non-commercial" farms, meaning they do not generate enough sales to be commercially viable on their own. Even for farmers in the next highest sales class, from $50,000 gross sales to $250,000 gross sales, where 86 percent of these farmers count farming as their primary occupation, the average return on equity is negative.

In 2002, the last year for which data are available, there were 53,930 farms in North Carolina with 9.1 million acres in farming. Included in these totals were 1,797 Black (non-white) farmers on 155,000 acres. This compares with 287,000 total farms on 186 million acres in 1950. In that year, 76,000 Black farmers farmed 3.1 million acres. In the last 25 years, the population of Black farmers has decreased by approximately 50%. Only 5% of principle farm enterprises reported by Black farmers in 2002 could be classified as specialty crops (fruits, vegetables, nurseries) enterprises.

North Carolina A&T State University is in the unique position to address issues related to small-scale, limited resource, African-American farmers in North Carolina in the state as it is in line with the mandate of the Cooperative Extension Program. Consequently, the principal focus of the Small-Scale Agriculture planned program in the School of Agriculture and Environmental Sciences will be the small-scale, limited-resource and African-American farmers in North Carolina.

Efforts include the use of development of specialty crop and livestock enterprises appropriate to direct marketing opportunities with urban consumers, utilization of sustainable farm management that foster the economic and social sustainability of low-income and socially disadvantaged, and the development of innovative delivery- systems that improve the effectiveness of current and visionary programs contemplated by the initiative. These efforts will address those issues identified previously that have led to and continue to encourage the departure of the Black farmer and the limited-resource farmer from the rural North Carolina agricultural landscape.

North Carolina A&T State University will develop teaching, research, and extension programs to preserve small farms as viable components of American agriculture. Small-scale agriculture will strengthen American society. Specific focus areas

include:
  ·   Small-scale Agricultural Enterprises and Production Practices
  ·   Alternative Marketing Strategies

2. Scope of the Program

  ● In-State Research

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

  •A continued drop in small-farm operations will continue in North Carolina
  •Research on factors affecting small farms can reduce loss in small farm operations
  •The effects of loss of tobacco production will intensify especially for small farmers

2. Ultimate goal(s) of this Program

The ultimate goal is to provide research and supportive systems to allow small farmers to continue in farming.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2009	0.0	0.0	0.0	3.2
2010	0.0	0.0	0.0	3.5
2011	0.0	0.0	0.0	3.8
2012	0.0	0.0	0.0	4.0
2013	0.0	0.0	0.0	4.2

V(F). Planned Program (Activity)

1. Activity for the Program

  ·   Conduct studies in the following areas: (1) to promote rural business growth by defining opportunities for rural entrepreneurs and connecting these entrepreneurs with small-scale agricultural enterprises, existing rural businesses and prospective entrepreneurs, (2) to determine viable alternatives to tobacco for small scale producers including floriculture production in tobacco greenhouses, outdoor and indoor mushroom production, and specialty melons and other crops, (3) to seek improved methods for washing green leafy vegetables for use especially by small scale farmers, and (4) to identify factors influencing successful small farm operations in North Carolina that can be developed into a protocol for evaluating the predicted success of small farm operations.
  ·   Present findings at professional meetings.
  ·   Publish research findings in professional journals.
  ·   Share findings with Extension educators, end users or stakeholders, and with other groups that may use the information to improve the viability of small scale agricultural operations.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	**Indirect Methods**
• Other 1 (Tours) • Demonstrations • Education Class • One-on-One Intervention • Workshop • Group Discussion	• Newsletters • TV Media Programs • Other 1 (Publications)

3. Description of targeted audience

The targeted audiences include the scientific community, the general public, small-scale farmers and operations, rural community businesses, tradtionally underserved populations and communities.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	**Target**	**Target**	**Target**	**Target**
2009	943	434473	0	0
2010	1038	456197	0	0
2011	1142	479007	0	0
2012	1256	502957	0	0
2013	1382	528105	0	0

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2009 : 0   **2010 :** 0   **2011 :** 0   **2012 :** 0   **2013 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2009	6	0	0
2010	6	0	0
2011	7	0	0
2012	8	0	0
2013	10	0	0

V(H). State Defined Outputs

1. Output Target

- # presentations at professional meetings

  2009 :7   **2010** :8   **2011** : 9   **2012** :10   **2013** :12

- # media occurrences

  2009 :9   **2010** :9   **2011** : 10   **2012** :11   **2013** :12

V(I). State Defined Outcome

O. No	Outcome Name
1	Increase in number of producers/growers of alternative crops/enterprises
2	Increase in production and sales of alternative crops and enterprises
3	% farmers in groups indicating increase in knowledge about small scale operations

Outcome #1

1. Outcome Target

Increase in number of producers/growers of alternative crops/enterprises

2. Outcome Type :   Change in Knowledge Outcome Measure

| **2009 :**240 | **2010 :** 250 | **2011 :** 300 | **2012 :**350 | **2013 :** 370 |

3. Associated Institute Type(s)

•1890 Research

4. Associated Knowledge Area(s)

● 202 - Plant Genetic Resources

● 205 - Plant Management Systems

● 308 - Improved Animal Products (Before Harvest)

Outcome #2

1. Outcome Target

Increase in production and sales of alternative crops and enterprises

2. Outcome Type :   Change in Knowledge Outcome Measure

| **2009 :**3000 | **2010 :** 4000 | **2011 :** 5000 | **2012 :**6000 | **2013 :** 7000 |

3. Associated Institute Type(s)

•1890 Research

4. Associated Knowledge Area(s)

● 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants

● 205 - Plant Management Systems

● 401 - Structures, Facilities, and General Purpose Farm Supplies

Outcome #3

1. Outcome Target

% farmers in groups indicating increase in knowledge about small scale operations

2. Outcome Type :   Change in Knowledge Outcome Measure

| **2009 :**75 | **2010 :** 75 | **2011 :** 80 | **2012 :**85 | **2013 :** 90 |

3. Associated Institute Type(s)

•1890 Research

4. Associated Knowledge Area(s)

● 205 - Plant Management Systems

● 401 - Structures, Facilities, and General Purpose Farm Supplies

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Government Regulations
- Public Policy changes
- Natural Disasters (drought,weather extremes,etc.)

Description

External factors that could impact the outcomes of this planned program include natural disasters like hurricanes that could bring immediate ruin and needed assistance to small farmers. Public policy and government changes could impact the outcomes of this planned program. Shifting of program resources may be neccessary to address the changes.

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- During (during program)

Description

    Evaluation studies will be completed annually as part of the strategic planning and evaluation activities of the School of Agriculture and Environmental Sciences. A position for an evaluation specialist is currently being filed. The person in this position will assist in developing the annual measures of the planned program.

2. Data Collection Methods

- On-Site
- Mail
- Structured
- Whole population
- Telephone

Description

    A variety of methods will be used to collect data regarding the outcomes. These methods will be more fully developed when a new evaluation position is added to the staff.

V(A). Planned Program (Summary)

Program #6

1. Name of the Planned Program

International Trade and Development

2. Brief summary about Planned Program

This planned program of International Trade and Development focuses on conducting research on issues and factors related to increasing domestic and international markets for food and agricultural and related products produced by North Carolina small scale farmers and businesses. This planned research is crucial to be able to assist small scale farmers and businesses in North Carolina develop markets for their food and agricultural products and related products. Finding improved ways to deliver technical assistance will enhance the impact of NCA&T's planned program and improve the economic status of small farmers and businesses. Also, as a result, the economic status of rural communities where these entities are located will be enhanced.

Specifically, this planned program has three major research thrusts: (1) economic development research used to deliver technical assistance to small scale farmers and rural businesses in leveraging capital to enhance economic growth; (2) trade policy research conducted to assess policy implications relative to domestic, regional and world trade and U. S. competitiveness; (3) applied international marketing research completed to gain greater understanding of traditional markets in Europe, North America and Asia and identifying U. S. niche market opportunities especially for small farmers and businesses.

3. Program existence :   Intermediate (One to five years)

4. Program duration :   Long-Term (More than five years)

5. Expending formula funds or state-matching funds :   Yes

6. Expending other than formula funds or state-matching funds :   Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
601	Economics of Agricultural Production and Farm Management				10%
602	Business Management, Finance, and Taxation				10%
603	Market Economics				15%
604	Marketing and Distribution Practices				15%
605	Natural Resource and Environmental Economics				10%
610	Domestic Policy Analysis				20%
611	Foreign Policy and Programs				20%
	Total				100%

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

In North Carolina, the issue is that small scale farmers and businesses need to expand the markets for their food and agricultural and related products in order to be economically viable. Expanding domestic markets is the primary focus but international opportunities provide a potential market for these products. However, small farmers and businesses need information, training and assistance to be effective players in the international arena. Research is needed to understand better ways to assist farmers and also to understand the implications and impact of both domestic and international policies on their involvement in the international markets.

The School of Agriculture and Environmental Sciences (SAES) has developed this initiative on International Trade and Development to help disadvantaged rural communities fuel economic growth by strengthening their domestic markets and by becoming players in the global marketplace. The International Trade Center has been established to lead these efforts.

The SAES has the scope of disciplinary expertise and wealth of experience to undertake research to address developing country food security, economic growth, and poverty alleviation and environmental sustainability problems. On going projects include the integrated pest management project being undertaken in Mali, and two research projects studying potential to improve market access for U.S. livestock and pork in the newly liberalized Chinese market.

The International Trade Center is well equipped to conduct domestic and international trade policy research, especially in tracking emerging issues that influence the competitiveness of North Carolina and U.S. agriculture. It also conducts applied international business marketing research to afford better understanding of both traditional and non-traditional/emerging markets abroad. Lessons learned from the research conducted on farm cooperatives contribute to improving farm profitability and enhancing the quality of life for rural-based limited-resource farm communities.

Emphasis and studies will focus on the following areas:

· economic development research
· trade policy research
· applied international marketing research

2. Scope of the Program

- Multistate Research
- In-State Research

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

· Export of food and agricultural products and related products will increase
· Small farmers and businesses have food and agricultural products that can be successfully marketed internationally
· Small farmers and businesses can be effective players in the international arena when they have knowledge on procedures and policies that affect their involvement
· Funding will be available for research on understanding and increasing international markets for small farm and business operations.

2. Ultimate goal(s) of this Program

The ultimate goal is to increase the competitiveness of small farmers and businesses in North Carolina to market their food and agricultural products and related products.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2009	0.0	0.0	0.0	1.5
2010	0.0	0.0	0.0	1.8
2011	0.0	0.0	0.0	2.2
2012	0.0	0.0	0.0	2.4
2013	0.0	0.0	0.0	2.4

V(F). Planned Program (Activity)

1. Activity for the Program

· Conduct research studies concerning the economic assessment of changes in trade agreements, bioterrorism threats and economic fuel requirements on various industry sectors, and seeking new domestic and international markets for North Carolina producers with particular emphasis on small scale operations.
· Present findings at professional meetings.
· Publish research findings in professional journals.
· Share findings with Extension educators and with other groups that assist small scale producers find markets for their products.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	**Indirect Methods**
- Other 1 (Tours) - Workshop - Demonstrations - One-on-One Intervention - Education Class - Group Discussion	- Other 1 (Publications) - TV Media Programs - Newsletters

3. Description of targeted audience

The target audience includes the producers in small scale agriculture and small businesses in North Carolina.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

Year	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
	Target	Target	Target	Target
2009	163	434473	0	0
2010	179	456197	0	0
2011	197	479007	0	0
2012	217	502957	0	0
2013	238	528105	0	0

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2009 : 0   **2010 :** 0   **2011 :** 0   **2012 :** 0   **2013 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2009	5	0	0
2010	6	0	0
2011	6	0	0
2012	7	0	0
2013	8	0	0

V(H). State Defined Outputs

1. Output Target

- # presentations at professional meetings

2009 :5   **2010** :5   **2011** : 5   **2012** :6   **2013** :7

- # media occurrences

2009 :8   **2010** :9   **2011** : 10   **2012** :12   **2013** :13

- # of research projects focusing on developing regional and international markets for NC products

2009 :4   **2010** :5   **2011** : 6   **2012** :6   **2013** :6

V(I). State Defined Outcome

O. No	Outcome Name
1	# of different NC products exported
2	# of small farmers and businesses trained and becoming involved in export of their products
3	% of increased income by farmers and businesses served by the International Trade Center
4	% of stakeholders who use the information and policy research in their decision making
5	# of new regional or national markets found for NC products
6	# of small farmers and businesses trained in finding regional and national markets for their products

Outcome #1

1. Outcome Target

# of different NC products exported

2. Outcome Type :   Change in Action Outcome Measure

2009 : 4	**2010 :** 4	**2011 :** 5	**2012 :** 6	**2013 :** 6

3. Associated Institute Type(s)

•1890 Research

4. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 611 - Foreign Policy and Programs

Outcome #2

1. Outcome Target

# of small farmers and businesses trained and becoming involved in export of their products

2. Outcome Type :   Change in Condition Outcome Measure

2009 : 4	**2010 :** 5	**2011 :** 5	**2012 :** 6	**2013 :** 6

3. Associated Institute Type(s)

•1890 Research

4. Associated Knowledge Area(s)

- 610 - Domestic Policy Analysis
- 611 - Foreign Policy and Programs

Outcome #3

1. Outcome Target

% of increased income by farmers and businesses served by the International Trade Center

2. Outcome Type :   Change in Condition Outcome Measure

2009 : 10	**2010 :** 10	**2011 :** 10	**2012 :** 15	**2013 :** 10

3. Associated Institute Type(s)

•1890 Research

4. Associated Knowledge Area(s)

- 610 - Domestic Policy Analysis
- 611 - Foreign Policy and Programs

Outcome #4

1. Outcome Target

% of stakeholders who use the information and policy research in their decision making

2. Outcome Type :   Change in Condition Outcome Measure

2009 :25   **2010 :** 25   **2011 :** 25   **2012 :**25   **2013 :** 25

3. Associated Institute Type(s)

•1890 Research

4. Associated Knowledge Area(s)

● 610 - Domestic Policy Analysis

● 611 - Foreign Policy and Programs

Outcome #5

1. Outcome Target

# of new regional or national markets found for NC products

2. Outcome Type :   Change in Knowledge Outcome Measure

2009 :11   **2010 :** 12   **2011 :** 12   **2012 :**13   **2013 :** 13

3. Associated Institute Type(s)

•1890 Research

4. Associated Knowledge Area(s)

● 610 - Domestic Policy Analysis

Outcome #6

1. Outcome Target

# of small farmers and businesses trained in finding regional and national markets for their products

2. Outcome Type :   Change in Knowledge Outcome Measure

2009 :25   **2010 :** 30   **2011 :** 40   **2012 :**50   **2013 :** 60

3. Associated Institute Type(s)

•1890 Research

4. Associated Knowledge Area(s)

● 603 - Market Economics

● 604 - Marketing and Distribution Practices

● 610 - Domestic Policy Analysis

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

● Government Regulations
● Other (Negotiations at the WTO)
● Public Policy changes
● Natural Disasters (drought,weather extremes,etc.)

Description

Public policy and government regulations regarding export of US products could greatly impact the outcomes. Outcomes could be increased by positive policy and regulation and greatly dwarfed by negative decisions.

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)
- Case Study

Description

Evaluation studies will be completed annually as part of the strategic planning and evaluation activities of the School of Agriculture and Environmental Sciences. An evaluation specialist position is currently being filled. This person will assist in developing the annual measures of the planned program.

2. Data Collection Methods

- Whole population
- On-Site
- Structured
- Mail
- Telephone
- Case Study
- Observation

Description

   A variety of measures will be used to collect data regarding the outcomes.